
Index

- adjacency matrix, 7
- affine span, 60
- affine toric scheme, 323
- amoeba, 17
- Artin–Schreier polynomial, 49
- associated prime, 104

- Bézout’s Theorem, 15, 16, 219, 341
- balanced, 12, 111, 116, 125, 127, 134, 137, 185
- Barvinok rank, 243, 246
- basis (of a matroid), 162
- Bergman construction, 20
- Bergman fan, 167, 181, 215
- Berkovich space, 311
- Bernstein’s Theorem, 201, 205, 210, 219
- Bieri–Strebel Theorem, 30
- binomial theorem, 3
- building set, 215, 303, 343
- buildings, 284

- Carathéodory’s Theorem, 231
- Cayley polytope, 201, 210, 212, 264
- characteristic polynomial, 225
- Chow group and Chow ring, 334
- Chow polytope, 191
- circuit, 155, 162, 185, 214, 251
- cnc pair, 311, 318
- Cohen–Macaulay, 305
- compactification, 34, 161
- complete variety, 299
- cone, 58

- connected through codimension 1, 113, 114, 128, 130
- Cox ring, 279, 280

- determinantal variety, 53, 248
- dimension, 53, 60
- discriminant, 32, 113, 152, 270
- divisorial, 301, 309, 316
- Dressian, 184, 185, 190, 217, 255, 266
- dynamic programming, 4, 9

- eigenspace, 224
- eigenvalue, 222, 223
- eigenvector, 222
- elliptic curve, 14, 36, 213
- Euler characteristic, 194, 213
- extended tropical hypersurface, 287, 346

- f -vector, 60, 102
- face, 59
- fan, 59, 111, 131, 278
- Fano matroid, 169, 179, 252
- Farkas Lemma, 232
- flat, 158, 163, 215, 303
- flat family, 71
- flat tropical, 304
- four-point condition, 172, 178, 184, 260
- Fundamental Theorem, 103, 106, 248, 288
- Fundamental Theorem of Algebra, 39

- genus, 14, 31, 33, 213
- geometric invariant theory, 280
- Gfan**, 65, 107, 129

- Gröbner basis, 26, 52, 74, 81, 124, 156, 177
 Gröbner complex, 78, 81, 85, 90, 106, 107
 Gröbner fan, 29, 81, 90, 215, 255
 graphic matroid, 168, 215, 268
 Grassmannian, 56, 77, 151, 170, 255
 Gromov–Witten invariants, 31, 32
 group, 25, 31, 41, 87, 133

 Hadamard product, 273
 Hilbert function, 68, 70
 Hilbert scheme, 307
 homogeneous ideal, 54, 75, 80
 homogenization, 37, 54
 Horn uniformization, 271
 hyperplane arrangement, 154, 217, 246, 269
 hypersimplex, 168, 259
 hypersurface, 53, 116

 implicitization, 21, 23, 55, 110
 index, 133, 151
 initial form, 66, 67, 81, 287
 initial ideal, 26, 66, 69, 75, 81, 82, 90, 288
 initial matroid, 165
 integer programming, 9, 40
 intrinsic torus, 297, 347

k-skeleton, 98
 Kapranov rank, 243, 248, 253
 Kapranov’s Theorem, 95
 Kleene plus, 223

 lattice length, 112, 205
 Laurent ideal, 82
 limit, 16, 142
 lineality space, 60, 74, 151, 171
 linear programming, 223
 linear space, 53, 154
 logarithmic limit set, 17, 20

Macaulay2, 27
 Maslov construction, 19
 matroid, 39, 162, 183, 216, 251
 matroid polytope, 165, 186
 matroid subdivision, 186, 259
 metric space, 40, 51, 171
 metric tree, 260
 Minkowski sum, 61, 201, 273
 mixed cell, 202, 206
 mixed subdivision, 201, 264
 mixed volume, 201, 203, 204, 206
 moduli space $M_{0,n}$, 302, 303, 315, 316
 morphism of tori, 110
 multiplicity, 12, 15, 118, 119, 134, 142, 209

 Nash equilibria, 211
 nested set complex, 215, 303
 Newton diagram, 46
 Newton polygon, 6, 13, 14, 61
 Newton polytope, 30, 61, 98, 101, 112, 208, 246
 Noether Normalization, 105
 non-archimedean, 51
 non-Pappus matroid, 216, 217, 253
 norm, 50
 normal crossing, 38, 301, 311
 normal fan, 60, 101, 132, 165, 209, 246
 normalized volume, 201

 order complex, 158

p-adic, 44, 49–51, 81, 89, 143, 152
 Passare construction, 19
 Petersen graph, 39, 161, 182
 phylogenetic tree, 171, 173, 176, 260, 262, 344
 Plücker coordinates, 56, 77, 151
 Plücker ideal, 57, 91, 170, 183
 Plücker relation, 80, 170, 183
 polyhedral complex, 59, 75, 76, 98, 328
 polytope, 58, 228
 polytrope, 225, 236, 274
 primary decomposition, 53, 70, 104, 118
 primitive, 125
 projective space, 52
 Puiseux series, 44, 45, 48, 49, 51

 radical, 128
 realizable matroid, 162, 168, 183, 216, 253
 recession cone, 328
 recession fan, 132, 181, 185, 188
 regular subdivision, 14, 62, 98, 119, 186, 192, 205
 regular triangulation, 62, 239
 residue field, 44, 65, 89
 ruled surface, 197

 semiring, 3
 Shitov’s Theorem, 255
 shortest path, 7, 8, 223
 simplicial, 59

- skeleton, 98, 150, 306
smooth, 192, 194, 197, 212, 217, 278
smooth curve, 14, 33, 40
snc pair, 311, 312, 315
special fiber, 324
spine, 19
splitting, 50, 73, 74, 94
stable intersection, 16, 40, 93, 133, 136,
139, 145, 151, 205, 206, 209
Stanley–Reisner ideal, 279, 335
star, 62, 90, 114, 132, 137, 188
star tree, 177
Structure Theorem, 114
support, 155, 250
- toric scheme, 323, 329
toric variety, 36, 273, 278
torus, 17, 52, 78
transverse, 122, 124, 142, 150
tree arrangement, 260
tree distance, 171
tree metric, 171, 172, 175
tropical basis, 30, 83, 86, 90, 103, 133,
157, 212, 254
tropical Bernstein, 205
tropical compactification, 301, 303, 304
tropical complex, 237
tropical convex hull, 228
tropical cubic surface, 195, 198, 199, 218
tropical curve, 12, 13, 41, 213
tropical cycle, 185, 191
tropical determinant, 10, 101, 149, 244
tropical Grassmannian, 169, 170, 183
tropical hypersurface, 11, 94, 98
tropical line, 12, 26, 199
tropical linear space, 39, 163, 185, 187,
216, 255
tropical plane, 266
tropical polynomial, 5, 13, 66, 94
tropical polytope, 228, 234, 236, 237,
244, 275
tropical prevariety, 102, 185
tropical projective space, 78
tropical quadric, 15, 17, 195
tropical rank, 4, 244, 253
tropical semiring, 2, 222
tropical surface, 152, 192
tropical variety, 20, 26, 41, 102
tropicalization, 9, 87, 93, 102
tropicalized linear space, 161, 180, 185,
249, 255
tropically convex, 228
tropically singular, 11, 40, 240, 244
ultrametric, 169, 175
uniform matroid, 168, 181, 210, 251, 270
unimodular, 240
unimodular triangulation, 13, 192, 195,
199
universal family, 181, 217
universal Gröbner basis, 80, 86, 90
- valuated matroid, 184
valuation, 43
value group, 43, 49, 60
valued field extension, 84, 103
vertex figure, 264
very affine variety, 52
- weight vector, 62, 66
weighted fan, 111
- Zariski topology, 54